
U.S./China Renewable Energy Forum

John Millhone

U.S. Department of Energy

China's Sustainable Development - Challenges and Opportunities



- *Reliance on coal combustion has adverse environmental impacts*
- *Must provide energy to 60-80 million poor people in remote areas*
- *China is paying increased attention to new and renewable energy*
 - *Agenda 21 and Ninth Five-Year Plan*
- *China has abundant energy potential in wind, solar, biomass, geothermal, hydro, and ocean tidal resources*

US/China Renewable Energy Cooperative Activities



- ***Energy Efficiency and Renewable Energy Protocol signed by SSTC/DOE on February 23, 1995***
- ***Protocol's 6 Annexes:***
 - ***Annex I, Rural Electrification - June 27, 1995***
 - ***Annex II, Wind Energy- October 25, 1996***
 - ***Annex III, Energy Efficiency - October 25, 1996***
 - ***Annex IV, Renewable Energy Business Development - October 25, 1996***
 - ***Annex V, Electric Vehicles - November 18, 1997***
 - ***Annex VI, Geothermal - November 18, 1997***
- ***US/China Energy & Environment Cooperation Initiative signed by DOE/SPC October 27, 1997***

Annex I - Rural Energy Development



- *120 hybrid wind/pv systems in Inner Mongolia*

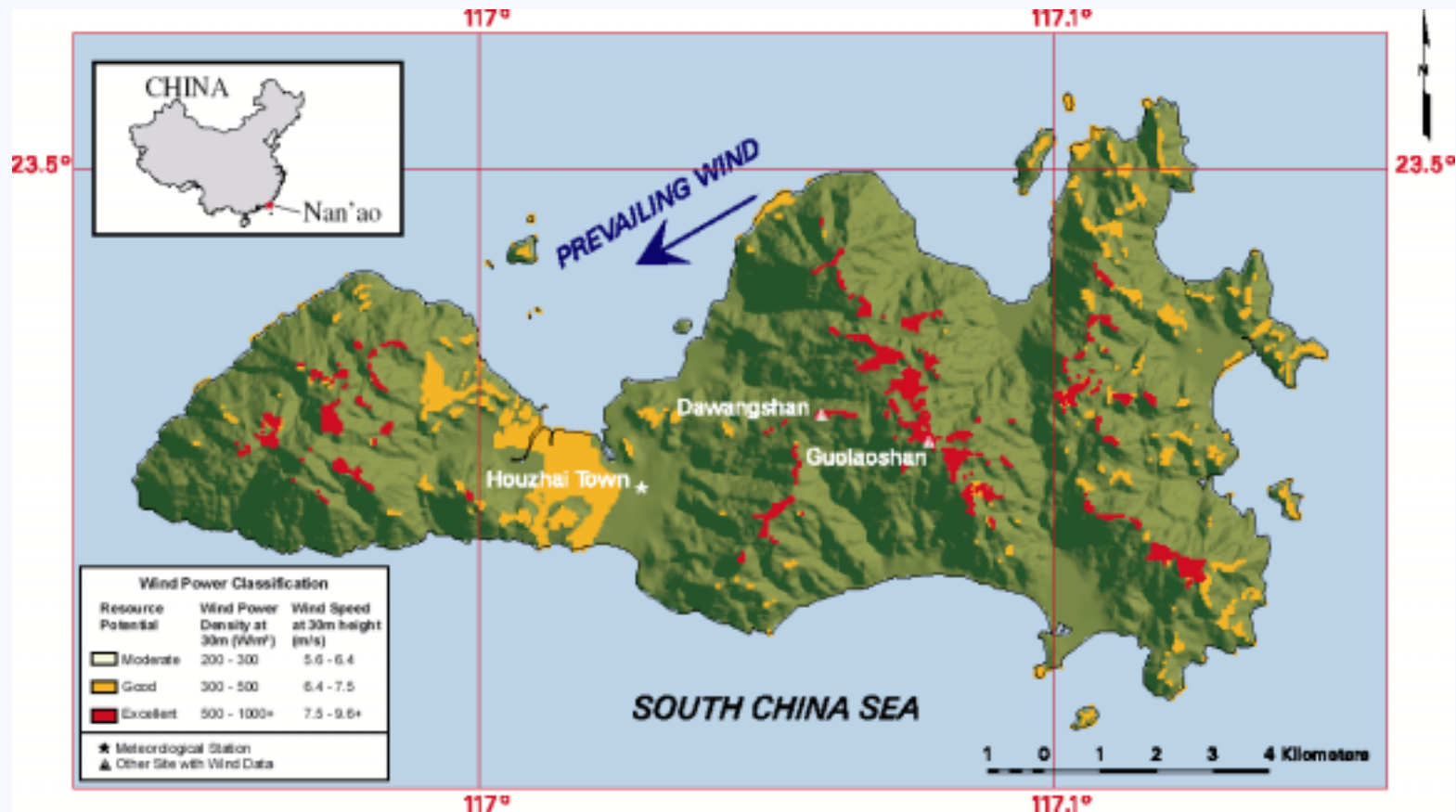


- *320 solar home systems installed in Gansu*



- *Establish national biomass database*

Annex II - Wind Power Development



- *Wind resources assessment and mapping*
- *Xiao Qing Dao project to electrify 120 households*

Annex IV – Renewable Energy Business Development



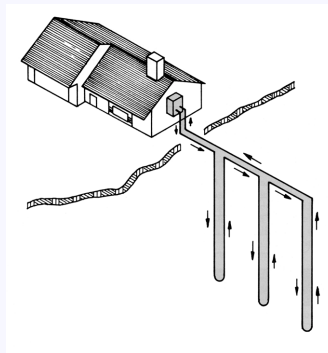
- *Published report on renewable energy market in China*
- *September 1998 Rural Electrification Workshop*
- *November 1999 trade mission*



Annex VI - Geothermal Production and Use



- *DOE provided technical assistance in Tengchong, September 1998*
- *Geothermal heat pump*
- *Major signing ceremony for a Beijing building, January 2000 in Washington, DC*



Project Name: Beijing Concordia Plaza
Address: Sanyuan Bridge, Chaoyang District, Beijing, China
Dimensions: 89,000 square meter

Key Activities for the Year 2000



- *Publish "Progress Report for US-China Cooperation in the Fields of Energy Efficiency and Renewable Energy"*
- *US-China Renewable Energy Forum and Study Tour in Washington, DC and renewable energy sites*
- *Train SDPC "Brightness Program" personnel*
- *Install 120 additional PV/wind hybrid systems in IM*
- *Pilot wind/diesel/battery system on Xiao Qing Dao*
- *Publish "Commercialization of Solar PV Systems in China"*
- *Internet web site*
- *Sign third geothermal agreement*

Cooperation Under APEC



- *Energy for sustainable communities*
- *Demand-side management development*
- *Energy efficiency technology training*
- *Energy service company (ESCO) development*

What Does DOE Expect from China?



Take market-based approaches:

- Reduce VAT for power produced by wind turbines from 17% to 6%
- Simplify approval process and make it transparent
- Encourage creation of Independent Power Producers and related infrastructure for renewable energy
- Promote tax credits for power production
- Reduce heavy subsidies by donor nations, to protect China's fledgling markets for solar PV
- Set national policy and regulatory framework that invite foreign investment and offer reasonable returns on investment

Conclusions



- *Collaborative US-China framework is established*
- *Successful projects can be replicated within China and set foundation for further cooperation*
- *DOE is committed to assisting China's sustainable development by:*
 - *Providing technical assistance for project planning*
 - *Exchanging personnel for collaborative R&D*
 - *Encouraging market-based approach to clean energy development*
 - *Assisting China to make relevant policy changes*
- *Renewable technologies will demonstrate their value in meeting China's energy needs and alleviating poverty*